

## REMARKS

Initially, the Applicants wish to thank the Examiner for the careful consideration given to this case. Claims 1-42 have been rejected under 35 U.S.C. §101 on the stated basis that the claimed invention is directed to non-statutory subject matter. Specifically, the Examiner states that claims 1-42 recite an abstract idea and do not produce a useful, concrete and tangible result.

Section 101 provides as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefore, subject to the conditions and requirements of this title.

The language of §101 exhibits Congress' intent not to place any restrictions on the subject matter which may be patentable, beyond the specifically recited limitations of § 101. State Street Bank & Trust Co. v. Signature Financial Group, Inc., 149 F.3d 1368, 1373 (Fed. Cir. 1998). In fact, the U.S. Supreme Court has recognized Congress' intent that §101 defines patentable subject matter to include "anything under the sun that is made by man." Diamond v. Chakrabarty, 447 U.S. 303, 309 (1980). In spite of the broad approach to defining patentable subject matter, "laws of nature, natural phenomena, and abstract ideas" are the three categories of subject matter identified as unpatentable by the Supreme Court. Diamond v. Diehr, 450 U.S. 175, 185 (1981). Nonetheless, only to the extent a mathematical algorithm represents nothing more than an abstract idea is it deemed unpatentable under § 101. Id.; In re Alappat, 33 F.3d 1526, 1544 (Fed. Cir. 1994) (*en banc*).

Of particular relevance to the instant matter, it is well-recognized that a mathematical algorithm directed to a real world problem is patentable subject matter under §

101, even if the mathematical algorithm in the abstract would not be entitled to such protection.

See, e.g., State Street, 149 F.3d at 1374. Stated alternatively:

even though a mathematical algorithm is not patentable in isolation, a process that applies an equation to a new and useful end is at the very least not barred at the threshold by § 101.

AT&T Corp., v. Excel Communications, Inc., 172 F.3d 1352, 1357 (Fed. Cir. 1999) (internal quotations omitted). This understanding of the scope of §101 applies “regardless of the form – machine or process – in which a particular claim is drafted.” Id.

Turning to claims 43-140, it is clear that to the extent a mathematical algorithm is employed in the inventions of these claims, it is directed to a practical application producing a “useful, concrete and tangible result.” Claim 43 is directed to diagnosing one or more latent attributes of an individual. This claim produces a useful, concrete and tangible result; namely, a determination of whether the individual has mastered a latent attribute. Thus, claim 43 satisfies the requirements of § 101. Additionally, claims 44-69 depend from claim 43 and incorporate the limitations of the allowable independent claim 43. As such, claims 44-69 similarly recite statutory subject matter, and are therefore patentable.

Claim 70 is directed to evaluating how effectively an examination tests for mastery of one or more attributes. This claim produces a useful, concrete and tangible result; namely, a determination that an examination does (or does not) effectively test for mastery of one or more attributes. Thus, claim 70 satisfies the requirements of § 101. Additionally, Claims 71-92 depend from claim 70 and incorporate the limitations of the allowable independent claim 70. As such, claims 71-92 similarly recite statutory subject matter, and are therefore patentable.

Claim 93 is directed to a system for diagnosing an individual’s cognitive attributes. This claim produces a useful, concrete and tangible result; namely, a determination of an individual’s mastery of one or more attributes. Thus, claim 93 satisfies the requirements of §

101. Additionally, claims 94-100 depend from claim 93 and incorporate the limitations of the allowable independent claim 93. As such, claims 94-100 similarly recite statutory subject matter, and are therefore patentable.

Claim 101 is directed to a system for evaluating how effectively an examination tests for mastery of one or more attributes. This claim produces a useful, concrete and tangible result. Namely, a determination that an examination should be remediated if it does not effectively test for mastery of one or more attributes. Thus, claim 101 satisfies the requirements of § 101. Additionally, claims 102-108 depend from claim 101 and incorporate the limitations of the allowable independent claim 101. As such, claims 102-108 similarly recite statutory subject matter, and are therefore patentable.

Claim 109 is directed to diagnosing unobservable disorders of a patient from observable characteristics resulting in identification of those disorders potentially afflicting the patient. This claim produces a useful, concrete and tangible result; namely, identification of those disorders potentially afflicting the patient. Thus, claim 109 satisfies the requirements of § 101. Additionally, claims 110-125 depend from claim 109 and incorporate the limitations of the allowable independent claim 109. As such, claims 110-125 similarly recite statutory subject matter, and are therefore patentable.


Claim 126 is directed to diagnosing the presence of unobservable characteristics of an object from an examination of the observable properties of the object. This claim produces a useful, concrete and tangible result; namely, identification of the unobservable characteristics of the object. Thus, claim 126 satisfies the requirements of § 101. Additionally, claims 127-140 depend from claim 126 and incorporate the limitations of the allowable independent claim 126. As such, claims 127-140 similarly recite statutory subject matter, and are therefore patentable.

Applicants submit that the amendment and response set forth herein is sufficient to overcome the rejection set forth by the Examiner. Accordingly, allowance of claims 43-140 is respectfully requested.

## CONCLUSION

Applicants submit that the amendment and response set forth herein is sufficient to overcome the rejections set forth by the Examiner. Accordingly, allowance of claims 43-140 is respectfully requested. Should the Examiner have any questions regarding these remarks, the Examiner is invited to initiate a telephone conference with the undersigned.

Respectfully submitted,  
PEPPER HAMILTON LLP

  
W. Joseph Melnik  
Registration No. 48,741

Pepper Hamilton LLP  
One Mellon Center, 50<sup>th</sup> Floor  
500 Grant Street  
Pittsburgh, PA 15219  
Telephone: 412.454.5000  
Facsimile: 412.281.0717  
Date: January 20, 2004